Unsuitable blood glucose measuring devices in neonatal or paediatric acute care

To the Editor: In acute neonatal or paediatric care, bedside blood glucose measurement is aimed predominantly at identifying hypoglycaemia, but high readings prompt the suspicion of diabetes mellitus or the stress hyperglycaemia of critical illness, in which high blood glucose levels correlate positively with poorer outcome.[1]

A recent case has reminded us that bedside glucose testing is not always specific for glucose only.[2]

A 13-day-old girl presented with persistent neonatal jaundice, profound micro-angiopathic haemolytic anaemia, a grossly prolonged prothrombin time and a white cell leukaemoid reaction of 53×10^9/l. *Escherichia coli* was cultured from the urine, and the patient responded to antibiotics.

Blood glucose monitoring with Accu-chek glucose meter (Roche Diagnostics) test strips gave persistently high readings. The absence of glycosuria and a comparison with laboratory blood glucose values alerted us to the fact that the readings were falsely elevated. This was due to a high blood galactose level in this patient, in whom the diagnosis of galactosaemia due to transferase deficiency was subsequently confirmed. We had failed to appreciate the fact that the glucose dye oxidoreductase mediator reaction (glucose dehydrogenase) as used in the Roche Accu-chek also measures galactose.[3]

Previously, in a comparison of point-of-care glucose meters Newman *et al*.[4] had found the Roche Accu-chek to give equimolar interference of galactose with glucose and therefore to risk gross overestimation of glucose in cases of galactosaemia.

A normal blood galactose level (<0.44 mmol/l[5]) is not high enough to result in clinically significant elevation of the combined blood glucose and galactose level. However, permanent or transient elevation of blood galactose is found in galactosaemia, liver dysfunction or maturational delay of galactose transport or utilisation,[5] and then can indeed affect measurements and clinical judgement. The present case illustrates this risk to the detriment of the patient.

We conclude that the Accu-chek glucose meter is not suitable as a blood glucose measuring device in neonatal or paediatric intensive care units wherever elevation of blood galactose levels cannot be excluded *a priori*, and should be removed from routine use in such areas.

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Information for patients

To the Editor: Most patients crave information concerning their illnesses and the interventions planned for their treatment. Most doctors are too busy to be able to give patients the additional time necessary to impart this and to encourage the patient to ask questions. My experience as the National Medical Ombudsman confirmed how important communication was in preventing subsequent problems. Furthermore, the law requires that for consent for a procedure to be valid, the patient must be fully informed – this is hardly ever done.

For all these reasons I would urge the various societies, specialist and general practice, to prepare relevant 'hand-outs'

for their patients, spelling out what is the matter with them, what, if anything, caused the problem, what is proposed to be done, what the possible complications are (with incidences) and how the post-intervention period is likely to run.

I anticipate that one objection to this suggestion will be that every patient is unique and that generalisations cannot therefore be made; another that every doctor is different and has different approaches to problems. I would counter these objections, firstly by claiming that there are many routine procedures in every branch of medicine and that it is in fact possible to make broad generalisations, which, if necessary, can be modified for individual patients. Secondly, the societies could put out generalised 'hand-outs' in digital form which could than be modified by the individual practitioners.

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